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***FACSIMILE COVER SHEET***  
**PLEASE DELIVER IMMEDIATELY!!!!**

Our Ref.: 11-893  
Your Ref.: \_\_\_\_\_ Date: October 27, 2003  
To: Cheryl Juska  
Firm: PTO, Group 1771  
Facsimile No.: (703) 872-9472  
From: Richard Besha  
Number of Pages (including cover sheet): 7

Andrea McCay  
FACSIMILE OPERATOR

ATTACHMENT/S: Exhibit A attached to Brodeur Declaration filed with  
Amendment on June 12, 2003 in S.N. 09/639,307

**MESSAGE:** Ms. Juska: attached is the best copy we have of this Exhibit.

**CONFIDENTIALITY NOTE**

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# Supreme Allweather Surfaces Incorporated

Mr. David Neuss  
Einstein Moomjy  
20 Hook Mountain Road  
Pine Brook, N.J. 07058

21 April, 1987

Dear David:  
The analysis of the Collins and Aikman power bond tiles involved in the IBM installation complaint in Stanford Conn. has been completed and the results are included with this letter. It is clearly evident that the problem is not one of installation nor moisture in the concrete, nor lack of concrete sealer. C&A has a serious problem with these tiles and needs to address this realistically. In any event, additional efforts would not add anything to this. I hope that they are not unduly hurt by this. C&A is a good company and should be counted on to do the right thing. Anything further that you need from me is as close as a call.

Best regards,

Ed. Brodeur  
141 Huntcliff Court  
Marietta, Ga. 30066

File "IBM 2"



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EE PROCEED

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Ref: Einstein Moomjy/IBM-Stanford Conn. C&A Power Bond tile  
installation

**PROBLEM: Shrinkage of Carpet Tiles**

CONSTRUCTION: 140 oz/sq.yd. nylon tufted in polypropylene primary backing, PVC precoat with a fiberglass non woven scrim incorporated in the precoat-backed with a preformed chemically blown approx. 20 lbs/cu ft density PVC foam containing a skin of solid vinyl.

SAMPLES: A variety of modules from the site as well as local uninstalled inventories were supplied.  
From Whiting Turner and Einstein Moomjy

**SAMPLE DESCRIPTION**

1	461 C-1 BLDG SECT AREA BY MONUMENTAL STAIRS
2	461 " " OUTSIDE AREA BY " "
3	433 C.S. STORAGE--NEW
4	474 A2 BLDG "D" AISLE BY 2nd PORTAL
5	471 " " WATER COOLER
6	474
7	448 BLDG C

**INVENTORY SAMPLES**

8	9300 63A784
9	9211 63A755
10	9300 63A895 B
11	9300 63A895 B3
12	9300 63A895
13	9302 63A171
14	9302 63A191
15	9302 63A196

**GENERAL OBSERVATION**

The general appearance as well as the uniformity of apparent quality is excellent. The modules are well made. Generally they all tend towards some "DOMING" and a little doming is desirable. Shrunken tiles are severely domed. Relaxed tiles show a varying amount of doming pointing to an obvious shrinking of the foam/skin layer. In addition to the suggested cause of water extraction given by C&A, the two most obvious and common causes of problems of this sort would be loss of low boiling residuals in the PVC, or in the case of any process involving heat and castings on belts, all built in stresses are not totally relieved or utilized by the construction or post laminating processing. These tiles are manufactured by a so called POWER BONDING process where the

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is pre made then heat laminated to a pre coated carpet by bonding surfaces to the hot melt range of the formulation then contact bonding the two surfaces together. Elementary laws of PHYSICS have to be taken into account in determining just how the inevitable expansion and subsequent contraction of the foam layer is to be handled in contact with a reinforced and relatively low heat affected precoated sandwich carpet construction.

### SECTION 1 INITIAL MEASUREMENTS

Using a table equipped with micrometer measurement capabilities the length and width 4 inches in from all edges of the back of the carpet tiles were measured and doming was recorded by measuring the height of each corner above the center of the module.

(In the following table L=length; W=width; R=right; l=left; R=front; R=back)

SAMPLE	SHRINKAGE				DOMING			
	Lr	Ll	Wl	Wr	Fr	Rr	Fl	Rl
1	-.037	-.038	-.035	-.023	.410	.713	1.08	.635 inches
2	-.021	-.015	-.015	-.005	.235	.345	.305	.595
3	+.001	-.001	-.008	+.009	.177	.046	.080	.195
4	-.087	-.055	-.080	-.055	.805	.813	1.25	.970
5	-.032	-.010	-.025	-.032	.343	.373	.465	.545
6	-.090	-.075	-.009	-.015	.362	.775	.410	.300
7	-.006	0	0	+.001	.070	.110	.145	.345
totals	-.272	-.194	-.172	-.039				
8	-.012	0	-.010	+.005				
9	0	+.015	+.012	+.015				
10	0	0	+.015	+.015				
11	-.003	-.013	-.003	+.008				
12	-.004	+.003	-.005	+.004				
13	-.017	-.010	0	+.012				
14	-.024	-.016	+.004	+.022				
15	-.035	-.031	-.012	+.005				
totals	-.095	-.052	+.012	+.072				

Samples 1 to 7 length totals are 2.25 times less than width  
 Samples 8 to 15 " " " " 2.70 " " " "

The overall consistency of a pattern of greater shrinkage in the length than in the width coupled with a correlation of doming and shrinkage, as well as the pattern also showing itself on uninstalled tiles; all of this suggests a stress problem in the tiles; more specifically in the backing layers of the tile.

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SECTION 2STRESS RELIEVING

Tiles #12 and #15 were allowed to hang freely in a dry heat oven at 150 deg.F. for one week. These are two relatively flat tiles. Severe doming as well as shrinkage similar to tiles #4 and #5 occurred.

	<u>SHRINKAGE</u>				<u>DOMING</u>			
	L <sub>1</sub>	L <sub>2</sub>	W <sub>1</sub>	W <sub>2</sub>	F <sub>1</sub>	F <sub>2</sub>	R <sub>1</sub>	R <sub>2</sub>
initial								
#12	- .004	+ .003	- .003	+ .006	flat			
aged								
#12	- .070	- .075	- .025	- .005	2.13	0.95	0.40	0.60
initial								
#15	- .035	- .031	- .012	- .003	flat			
aged								
#15	- .050	- .039	+ .004	+ .013	0.72	2.20	2.00	1.70

SECTION 3WATER EXTRACTION

Two inch strips from tile #3 were sliced into layers such that one layer would be predominantly face, precoat, and fiber reinforcement with the other being totally foam and skin. These samples were conditioned for 24 hours at 80 deg.F. and 50 % relative humidity. The samples were then allowed to rest in a bath of water at 150 deg.F. for one week.

RESULTS (wt. in grams)

Sample	in. weight	final weight	
		dried 2 hrs @ 150	dried 24 hrs @ R.T.
whole (cut)	66.2	66.5 (+0.5%)	65.9 (-0.5%)
face	34.2	32.7 (-4.9%)	32.6 (-4.7%)
foam/skin	30.6	29.3 (-3.7%)	29.3 (-3.7%)

The samples removed from the water and dried came up with approx. a 4.7% shrinkage of the foam/skin layer. Floating in the hot water, these samples were free to contract unencumbered.

SECTION 4VOLATILES

A two inch strip was slit into three component layers representing: face/precoat/fiberglass--100% foam--predominantly skin. After a 24 hour R.T. conditioning (50% R.H.) the samples were weighed and suspended in 150 deg.F. dry heat for one week.

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RESULTS (wt in grams)

sample	initial	24 hours	7 days	+24 hrs RT
whole	100.7	100.5	99.36(-1.4%)	99.98(-0.9%)
face	51.8	51.3	50.2(-3.0%)	50.1(-1.9%)
foam	12.2	12.2	11.3(-7.8%)	11.4(-7.0%)
skin	27.2	27.2	26.4(-3.0%)	26.2(-3.6%)

NOTE: BOTH THE FOAM AND SKIN SAMPLES GREW FROM 1/4 TO 1/2 INCHES IN LENGTH as a result of the loss in modulus with heat (150 deg.F.) allowing simple gravity/static load effect to elongate the unreinforced PVC.

SECTION 5:STRESS RELIEVING:

In view of the results of the previous sections, additional strips were conditioned, slit, and allowed to rest horizontally at 150 deg.F. for 30 mins; 2 hours; 24 hours. After each exposure, the samples were allowed to cool to room temp and measured.

RESULTS: (length in inches)

sample	initial	30 mins.	2 hrs	24 hrs
whole	12.0	11.97(-.21%)	11.67(-3.8%)	11.60(-3.3%)
FACE	12.22	12.05(-1.35%)	12.05(-1.25%)	12.02(0)
FOAM/SKIN	12.0	11.67(-2.6%)	11.92(-4.6%)	11.39(-5.1%)

CONCLUSION:

The results of these tests show that the problem with the tiles in question are caused by the most logical and time established reasons for such problems and not by any unforeseen mysterious phenomenon. The data of section 3 would, by itself, point in some direction of water/moisture influence, however when examined in conjunction with section 4 this loss can be totally accounted for and attributed to the temperature of the medium of exposure, the subsequent relieving of processing stresses, and the gradual loss of volatiles. The ease with which the observed problem is duplicated (section 2 & 3) suggests that these conclusions can be easily verified and must be known by C&A.

Why is this taking some time to develop out in the field? Quite simply, once the tiles are removed from a confining environment of a package where the forces involved are not great enough to force the tiles out of their environment then weak so called permanent set temporarily over shadows the memory factor of the PVC. This memory factor in the form of paramagnetic polar bonds is still there and in time will keep a slow but steady and increasing pressure on the tile. In the case in question we have an adhesive that is not cross linking in nature, but quite the contrary, is one designed to allow possible removal of the addition of

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Later date, then there just simply is nothing there to prevent COLD  
WARP.

The process by nature (tile making process) places different stresses  
on different tiles and to some extent, even on the same tile. The  
adhesive adheres some better than others. There just isn't any way that  
all of the tiles are going to show uniformity of behavior once applied,  
in this case. Permanent gluing defeats the purpose of using tiles.

Ed. Brodeur